

UNITED STATES NON-PROVISIONAL

PATENT APPLICATION

FOR

MODULAR DECK

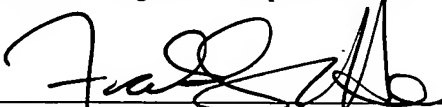
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MODULAR DECK

BACKGROUND OF THE INVENTION

Field of the Invention

[001] This invention relates to a decking system and more particularly, to a modular decking system.

Description of the Related Art

[002] Exterior decks are popular additions to houses and apartments because they provide convenient and pleasant areas for entertainment and relaxation. Decks expand the area available for entertainment and outdoor living because they provide a level, clean and dry alternative to the natural landscape. Decks are often preferred over other structures, such as concrete or brick patios, because they are cooler in the summer time and more attractive year around. Modern deck construction currently provides decks that are essentially as permanent as concrete and brick patio installations, which is a problem if the deck owner prefers a structure that is easily moved to an alternate location.

[003] Most decks today are "stick built." The "stick built" method entails a contractor or homeowner constructing a deck having dimensions and a configuration that are unique to the construction site. As a result, the majority of decks that are built are non-uniform and the stick built construction method increases the time and materials necessary to build these decks, which increases the cost.

[004] Others have recognized certain disadvantages of the stick built method of deck construction and have designed modular decks that may be installed by homeowners and other amateur builders in their backyards. For example, in U.S. Patent No. 4,622,792 issued to Betts, a modular decking structure is disclosed having rectangular flooring platforms and joists that crisscross to form rectangular frames that are used to support the rectangular flooring platforms. In U.S. Patent No. 4,823,529 issued to Canfield, *et al.*, a modular decking structure is disclosed that is designed to be installed on leg supports, with stairs and handrails, and therefore is not an alternative to a brick or concrete patio. The problem with both of these exemplary modular decking systems and with the other modular decking systems that are currently available is that

they all require the people who are assembling the decks to perform significant cutting and assembly of the component parts.

[005] What is missing from the modular decking construction industry is a simple modular decking system that can be easily assembled by a homeowner who has no experience in building decks. It would be desirable if the modular decking system could be installed as an alternative to a concrete or brick patio, without steps, handrails and the complicated support structure that a raised decking system would require. It would be particularly advantageous to have a modular decking system that was easily assembled and could also be easily disassembled, moved, and then easily reassembled in a different location.

SUMMARY OF THE INVENTION

[006] The present invention provides a modular deck system and modular deck components. One embodiment includes a deck module comprising a base and deck flooring attached to the base to provide an overhang and an exposed base edge, wherein each end of the deck flooring extends beyond each end of the base. A preferred base is rectangular comprising two base sides attached to two base ends and may further comprise intermediate supports. The deck module may be built of any of the materials known to those having ordinary skill in the art although wood and composite materials are included in a preferred embodiment. Deck flooring boards made of treated wood or composite materials are included in a preferred embodiment, but plywood, sheets, particle board, planks and other forms of wood, composites, or other materials may also be used. When using deck flooring boards, any number of deck flooring boards per deck module may be used, preferably between 2 and 6 deck flooring boards, with three boards being used in a preferred embodiment.

[007] The overhang of each deck module is at least about 0.5 inches, preferably between about 0.5 inches and about 3 inches, and about 2 inches in a preferred embodiment. The exposed base edge is at least about 0.25 inches, preferably between about 0.5 inches and about 2 inches, and about 1.5 inches in a preferred embodiment. In a preferred embodiment, the overhang is wider than the exposed base edge, preferably at least 0.25 inches wider and more preferably, between about 0.25 inches and about 1 inch wider than the exposed edge.

[008] The deck flooring is longer than the base, preferably extending between about 1 inch and about 16 inches beyond each end of the base and more preferably extending between about 4 inches and about 10 inches beyond each end of the base. The means for attaching the deck flooring to the base is by glue, screws, nails, clamps, staples or combinations thereof. When the deck modules are placed adjacent to each other during the construction of a modular deck, a first deck module is positionable such that the overhang of the first deck module covers the exposed base edge of an adjacent second deck module.

[009] An end deck module is also included in the present invention. In a preferred embodiment, the end deck module is merely a deck flooring board. In another embodiment, the end deck module comprises a base and deck flooring attached to the base to provide an overhang on each side of the base, wherein the overhangs are each between about 0.5 inches and about 3 inches. In a preferred embodiment, the deck flooring for the end deck module is made of wood, composite or combinations thereof in the form of deck flooring boards. In one embodiment, each end deck module is formed with between 2 and 6 deck flooring boards, preferably with 3 deck flooring boards.

[010] The present invention further provides a modular deck system. In one embodiment, the modular deck system comprises an outer rectangular frame and one or more deck modules. Each deck module comprises a base and deck flooring attached to the base to provide an overhang and an exposed base edge as described above. Furthermore, each end of the deck flooring extends beyond each end of the base for attachment to opposite ends of the outer rectangular frame. The system further includes an end deck module as described above, wherein each end of the end deck module is attachable to opposite ends of the outer rectangular frame, wherein an edge of the end deck module is attachable to a side of the outer rectangular frame, and wherein an opposite edge of the end deck module is attachable to the exposed base edge of one of the one or more deck modules.

[011] When assembling a modular deck comprising one deck module and one end deck module, the one deck module is positionable such that the overhang covers an opposite side of the outer rectangular frame and the end deck module is positionable to cover the exposed base edge of the one deck module. When assembling a modular deck comprising more than one deck module, then one deck module is positionable such that the overhang of the one deck module

covers an opposite side of the outer rectangular frame and a second deck module is positionable such that the overhang of the second deck module covers the exposed base edge of the one deck module. For any two or more deck modules, each of the deck modules are positionable such that the overhang of a first deck module covers the exposed base edge of an adjacent deck module.

[012] The deck flooring is attachable to a top edge of the opposite ends of the outer rectangular frame. In one embodiment, the opposite ends of the outer rectangular frame include a first board and a second board attached to an inner face of the first board. While either board may be wider than the other, or of equal width, in one preferred embodiment, the first board is wider than the second board. Optionally, a third board may be attached to an outer face of the first board as decorative facing. A preferred decorative facing is a deck flooring board. The outer rectangular frame may further comprise one or more intermediate supports, wherein each intermediate support is attached to an inside face of each of the two sides of the outer rectangular frame.

[013] The foregoing and other objects, features and advantages of the invention will be apparent from the following more particular description of a preferred embodiment of the invention, as illustrated in the accompanying drawing wherein like reference numbers represent like parts of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[014] FIG. 1 is a perspective view of a deck module that may be used in accordance with the present invention.

[015] FIG. 2 is a perspective view of a portion of the outer rectangular frame used in the modular construction of a deck.

[016] FIG. 3 is a perspective view of a deck module supported by the outer rectangular frame.

[017] FIG. 4 is a perspective view of one embodiment of an end deck module that may be used in a modular deck in accordance with the present invention.

[018] FIG. 5 is an exploded view of one embodiment of an end deck module used in a modular construction of a deck in accordance with the present invention.

[019] FIG. 6 is a top view of a completed modular deck.

[020] FIG. 7 is a cross-sectional view of the completed modular deck similar to the one shown in FIG. 6.

[021] FIG. 8 is a perspective view of the placement of support blocks used to support and level a modular deck in accordance with the present invention.

DETAILED DESCRIPTION

[022] The present invention provides a modular decking system and decking components that may be used to assemble a deck. The modular deck may be assembled easily using prefabricated modules that may be arranged to provide a variety of final deck sizes and configurations. In one preferred embodiment, several prefabricated decking modules are supported by an outer rectangular frame to provide a finished deck having the appearance of a custom stick built deck.

[023] One embodiment of the present invention includes a deck module. One or more of these prefabricated deck modules may be used to construct a finished deck. Each deck module comprises a base having deck flooring attached to the base. The deck flooring typically is standard decking boards, which measure 2 x 6 inches nominally, but the present invention is not limited to standard decking boards as any size or type of material may be used in accordance with the present invention, including, for example, plywood, particle board, sheets and planks. In addition to wood, the deck flooring may be made of pressure treated wood, plastic, or composite materials. There are currently many different composite materials being used to produce decking boards that include, for example, mixtures of wood and plastic or mixtures of rice hulls and plastic. The plastic used in the composite materials is often recycled plastic to provide an environmentally friendly product.

[024] It is recognized that building materials come in a wide selection of sizes, shapes and types and provide the builder having ordinary skill in the art with a wide selection from which to choose. All building materials that are known to be suitable for deck construction by those having ordinary skill in the art are suitable for use with the present invention and the disclosure herein of particular building materials and their sizes, shapes and types are not meant to limit the present invention, but are provided as examples only.

[025] The base to which the deck flooring is attached is typically constructed of boards comprising two base sides and two base ends, attached to each other to form a rectangle. One or more intermediate supports may be included that run parallel to the two ends and run between the inside faces of the two base sides. Typically, the deck module base, including the intermediate supports, is constructed of 2 x 4 inch lumber but other sizes and types of material may be used as appropriate for a given application as known to those having ordinary skill in the art. The two sides, the two ends and the intermediate supports, if any, may be joined with nails, glue, screws, bolts, clamps, staples or combinations thereof. Likewise, the deck flooring may be attached to the deck module base with nails, glue, screws, bolts, clamps, staples or combinations thereof. In a preferred embodiment, the deck flooring is attached to the base of the deck module with screws.

[026] The deck module base is dimensioned based upon the length and the number of the deck flooring boards, or the length and width of alternate deck flooring, that are attached to the deck module base. Any number of deck flooring boards may be attached to one deck platform frame, but in a preferred embodiment, three standard deck flooring boards are attached to the deck module base with about a one-eighth inch gap between each of the three deck flooring boards. The three-board deck module provides a convenient size and weight for a typical amateur builder to handle. It is preferred, when using pressure treated lumber, to assemble the deck module with wood containing no more than about 30% moisture and that the pressure treated lumber be dried to at least the about 30% moisture content before use. If pressure treated lumber is used having a higher moisture content, then the shrinkage that occurs when the lumber dries will cause the deck dimensions to change more than an acceptable amount.

[027] In one embodiment, the deck module base may be between about 2 inches and about 40 inches shorter than the length of the deck flooring boards. Preferably, the deck module base may be between about 2 inches and about 32 inches shorter than the length of the deck flooring boards and more preferably, between about 8 inches and about 20 inches shorter than the length of the deck flooring boards, thereby allowing the deck flooring to extend between about 4 and about 10 inches on both ends of the deck module base. The deck module base may be of any length but preferably is dimensioned to accommodate standard length deck flooring boards, which are typically available at about 8, 12 and 16 foot lengths.

[028] The deck flooring must be attached to the deck module base at an offset from the sides of the base, thereby providing an overhang portion of deck flooring on the first side of the base and further providing an exposed edge of the base on the second side. With two deck modules, the overhang portion of the deck flooring on the first deck module may be attached to the exposed edge on the second side of the second deck module. The overhang portion of the deck flooring may extend between about 0.5 inch and about 3 inches beyond the first side of the base. Preferably, the overhang portion of the deck flooring may extend between about 2 inches to about 2.5 inches beyond the first side of the deck platform frame. The exposed edge of the deck platform frame on the second side of the deck platform frame may be between about 0.25 inches and about 2 inches. Preferably, the exposed edge of the deck platform frame on the second side of the deck platform is between about one inch and about 1.5 inches.

[029] The deck modules may be supported on the opposite ends of the outer rectangular base. In one embodiment, these opposite ends include two boards that are joined together face to face. While not limited to any particular dimensions, one preferred embodiment of the opposite ends of the outer rectangular base includes a 2 x 6 inch board having a 2 x 4 inch board attached to the inside face of the 2 x 6 board. The top edges of the two boards are preferably aligned evenly with each other, thereby providing a nominal 2 inch wide notch along the bottom of the inside face of the 2 x 6 board. Optionally, a deck flooring board may be attached to the outside face of the 2 x 6 board as a decorative facing board to provide a finished look.

[030] The opposite ends of the outer rectangular frame are attached to the two side members, thereby forming the outer rectangular frame onto which the deck modules may be mounted. In one preferred embodiment, the outer rectangular frame sides are single deck flooring boards that provide a finished look. However, other types of boards may also be used as the frame sides. Optionally, intermediate supports may be installed between the outer rectangular frame sides. For example, for a twelve foot long deck, a preferred embodiment includes one intermediate support located 6 feet from the end of the deck. In one embodiment, the intermediate supports are 2 x 4 inch boards.

[031] To assemble a deck using the components of the present invention, first the outer rectangular frame is assembled with the opposite sides and the opposite ends joined together to form the outer rectangular frame. In one embodiment, the sides of the outer rectangular frame

are dimensioned to separate the inside faces of the ends of the outer rectangular wall by between about 1 and about 8 inches greater than the length of the bases of the deck modules, preferably between about 2 and about 6 inches. This distance provides room to align the edges of the deck module flooring for a finished look.

[032] Furthermore, the opposite ends of the outer rectangular frame are typically between about 2 and about 5 inches shorter than the width of the finished deck. The opposite ends of the outer rectangular frame are dimensioned to be long enough to provide support for each of the deck modules and for the end deck module yet short enough to allow the end deck module and the first deck module to overlap the top edges of the opposite sides of the outer rectangular frame to provide a finished look. In a preferred embodiment, the sides attach to the ends of the outer rectangular frame using screws. Pilot holes for the screws may be provided in the sides for ease of assembly.

[033] After the outer rectangular frame is assembled, the frame must be leveled and support provided. In one embodiment, standard concrete blocks that measure 8"x16"x2" are used to provide the level support for the deck. Alternatively, other size blocks or bricks may be used or concrete pads may be poured for support. Typically, one or more blocks are used at each corner of the outer rectangular frame. For wider decks exceeding about 8 feet, additional blocks are added along the support frame members between these corner blocks at approximately 4 to 6 foot intervals to provide necessary support. For longer decks that are about 12 or more feet long, intermediate supports are required and support blocks are typically placed under the intermediate supports where the intermediate supports attach to the side frame members. Additional support blocks are typically used for wide decks under the intermediate supports at 4 to 6 foot intervals between the side frame members. It should be noted that in a preferred embodiment having support frame members comprising a 2x4 board attached to an inside face of a 2x6 board, the 2 inch support block fits under the 2x4 board so that the 2x4 board is resting upon the top of the support block. To provide a nearly level support, more than one block may be required at some locations if the building site is sloping.

[034] After the outer rectangular frame is leveled and properly supported, the first deck module is positioned within the outer rectangular frame so that the overhang of the deck flooring overlaps the top edge of one of the sides of the outer rectangular frame. The deck flooring is

supported on either end by the opposite ends of the outer rectangular frame. Additional deck modules may be positioned within the outer rectangular frame so that the overhang portion of the deck flooring of one deck module overlaps the exposed base edge of the adjacent deck module. When the last deck module is placed within the outer rectangular frame, the end deck module is positioned so that the deck flooring of end deck module covers the exposed edge of the base of the last deck module and the top edge of the second side of the outer rectangular frame. Adjustments may be made at this time to provide even spacing for all the deck platforms and the end deck module to provide a finished look. Then each of the overhang portions of the deck flooring is attached to either the top edge of the outer rectangular frame sides or the exposed base edge of the adjacent deck modules as the case may be. The deck flooring is also attached to the opposite ends of the outer rectangular frame. Preferably, screws are used to attach the deck flooring to the exposed edges and the outer rectangular frame, although other fasteners, such as nails, clamps, staples, bolts or glue may be used as an alternative. The advantage of using screws is that the deck may be disassembled, moved to an alternate location, and reassembled quickly and easily if desired.

[035] Finished decks of varying sizes may be placed adjacent to each other to form larger decks having shapes such as rectangles, u shapes, L shapes, and walkways. The adjacent finished decks may also be placed at different levels by raising one section higher than another by, for example, placing a greater number of support blocks under one section.

[036] FIG. 1 is a perspective view of a deck module that may be used in accordance with the present invention. The deck module 10 includes the base 11 and deck flooring 17 attached to the base 11. The base 11 includes two base sides 13 and two base ends 12 that are attached to form a rectangle. The deck flooring 17 is attached to the base 11 at an offset to form an overhang 16 of the deck flooring 17 on one side of the base 11 and an exposed base edge 15 of the base 11 on the opposite side. The deck flooring 17 is attached to the base 11 at the base ends 12, the intermediate supports 14 (FIG. 5), and optionally, the base sides 13, preferably with screws (not shown).

[037] FIG. 2 is a perspective view of a portion of the outer rectangular frame used in the modular construction of a deck. The outer rectangular frame 20 provides support for the individual deck modules 10. (FIG. 1). The outer rectangular frame 20 has two opposite sides 21

and two opposite ends 26 (only one shown), each of the opposite ends 26 having a first board 24 with a second narrower board 23 attached to the inside face of the first board 24. Optionally, a third outer board 25 may be attached to the outside face of the first board to provide a finished look. In one embodiment, a piece of deck flooring is used as the third outer board 25 to provide a uniform finished look. The top edges of each of the three boards 23, 24, 25 are aligned evenly, thereby forming a notched area 22 under the narrower board 23. The notched area 22 may be used for inserting a support block as shown in FIG. 8.

[038] FIG. 3 is a perspective view of a deck module supported by the outer rectangular frame. A first deck module 10 is supported by the opposite ends 26 of the outer rectangular frame 20. The overhang 16 of the deck module 10 overlays the top edge of the adjacent side member 21 of the outer rectangular frame 20. Each of the ends of the deck flooring 17 overlays the opposite ends 26. The opposite ends 26 support the deck module 10. The exposed edge 15 of the deck module 10 will be covered by a second deck module (not shown) set adjacent to the deck module 10 shown.

[039] FIG. 4 is a perspective view of one embodiment of an end deck module that may be used in a modular deck in accordance with the present invention. The end deck module 30 is similar to the deck module 10 except that the deck flooring 17 is centered on the base 11, having equal overhangs 16 on each side of the base 11. Alternatively, in a preferred embodiment, a single piece of deck flooring 28 may be used as the finishing piece as shown in FIG. 5.

[040] FIG. 5 is an exploded view of one embodiment of an end deck module used in a modular construction of a deck in accordance with the present invention. In a preferred embodiment shown in FIG. 5, the end deck module 28 is a single board of deck flooring. After the deck modules 10 are positioned within the outer frame 20 (FIG. 2), the area between the last deck module 10 having the exposed base edge 15 and the outer rectangular frame side 21 is covered with the end deck module 28. To provide additional support for the end deck module 28, an additional support board 27, a 2 x 4 in one preferred embodiment, is attached to the inside face of the outer rectangular frame side 21.

[041] FIG. 6 is a top view of a completed modular deck. An end deck module 28 is placed adjacent to a deck module 10 to form a completed deck. Each of the modular sections,

the deck module 10 and the end deck module 28, are supported by the opposite ends 26 of the outer rectangular frame 20 (FIG. 2). The end deck module 28 covers both the exposed top edge of the deck module 10 and the top edge of the outside rectangular frame side 21, and the support board 27.

[042] FIG. 7 is a cross-sectional view of a completed modular deck similar to the one shown in FIG. 6. The modular deck shown in FIG. 6 only has one deck module 10. Two deck modules 10 are shown with one end deck module 28. The overhang 16 of the first deck module 10 covers the top edge of the outer rectangular frame side 21. The overhang of the second deck module 10 covers the exposed base edge 15 of the first deck module 10. It should be noticed that there is a gap between the adjacent base sides 13 of the two deck modules 10 and between the adjacent base side 13 of the second base module and the support board 27 to provide room for adjusting the space between the modules 10 and between the second deck module 10 and the end deck module 28.

[043] FIG. 8 is a perspective view of the placement of support blocks used to support and level a modular deck in accordance with the present invention. Support blocks 45 may be used to provide level support for the deck. The notched area 22 formed under the narrower board 23 of the frame end 26 provide a convenient location for placing the support blocks 45. For decks requiring an intermediate support 46, support blocks 45 should be provided along the intermediate support 46. Preferably, support blocks 46 are placed at each corner (2 shown), where the intermediate support 46 attaches to the frame sides 21 (1 shown), and between these locations at about 4 to 6 foot intervals if the deck spans more than about 8 feet.

[044] It will be understood from the foregoing description that various modifications and changes may be made in the preferred embodiment of the present invention without departing from its true spirit. It is intended that this description is for purposes of illustration only and should not be construed in a limiting sense. The scope of this invention should be limited only by the language of the following claims.